

# WordArt Designer API: User-Driven Artistic Typography with Large Language Models on ModelScope

**Jun-Yan He<sup>1</sup> Zhi-Qi Cheng<sup>2\*</sup> Chenyang Li<sup>1</sup> Jingdong Sun<sup>2</sup> Wangmeng Xiang<sup>1</sup>  
Xianhui Lin<sup>1</sup> Xiaoyang Kang<sup>1</sup> Zengke Jin<sup>3,4</sup> Yusen Hu<sup>2,5</sup> Bin Luo<sup>1</sup>  
Yifeng Geng<sup>1</sup> Xuansong Xie<sup>1</sup> Jingren Zhou<sup>1</sup>**  
<sup>1</sup>Alibaba DAMO Academy <sup>2</sup>Carnegie Mellon University <sup>3</sup>Zhejiang Sci-Tech University  
<sup>4</sup>Royal College of Art <sup>5</sup>Imperial College London

---

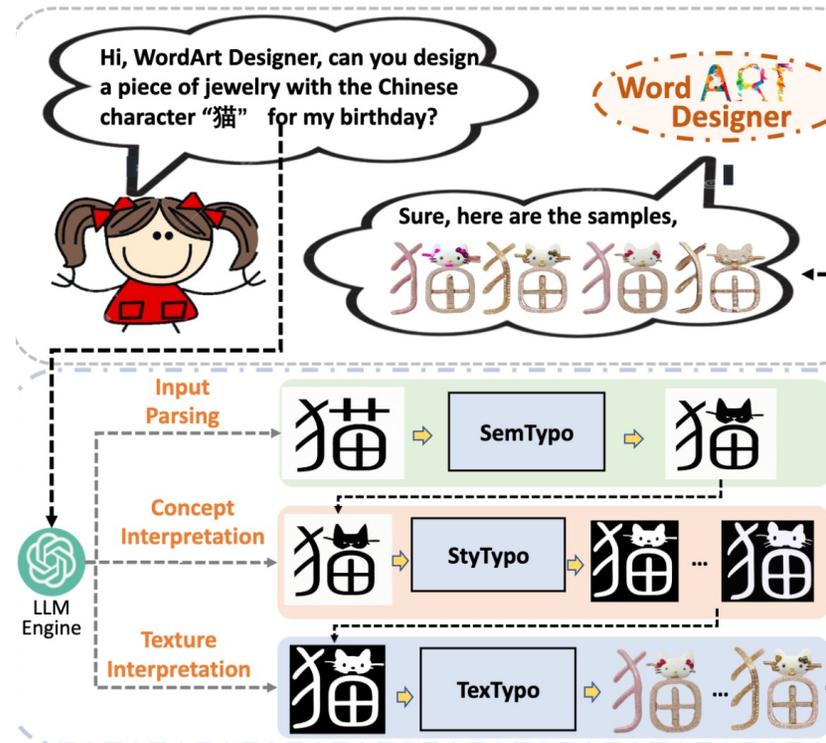
\*Corresponding author

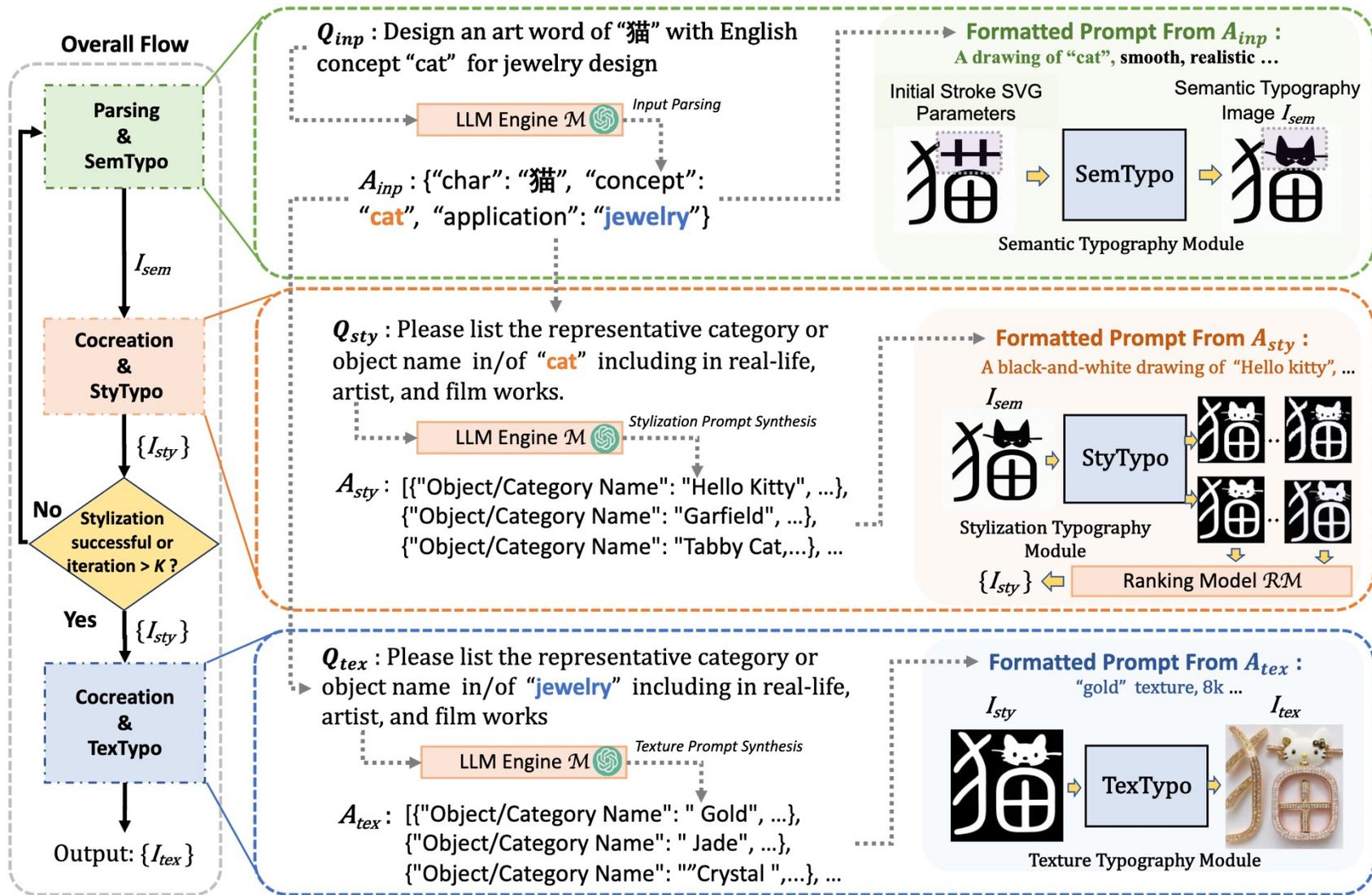
# The Challenge of Artistic Typography Design

- Typography, a critical intersection of language and design, finds extensive applications across various domains. Despite its relevance, the mastery of artistic typography design remains an arduous task for non-professionals.
- Some attempts have been made to improve typography's accessibility to amateur designers, but they are often constrained to predefined concepts, lack adaptability, creativity, and are computationally inefficient.

# Introducing: WordART Designer

- A user-driven framework for artistic typography synthesis, relying on Large Language Models (LLM).
- Powered by the LLM Engine, SemTypo, StyTypo, and TexTypo modules, and enables an iterative synthesis process utilizing a quality assessment feedback system.

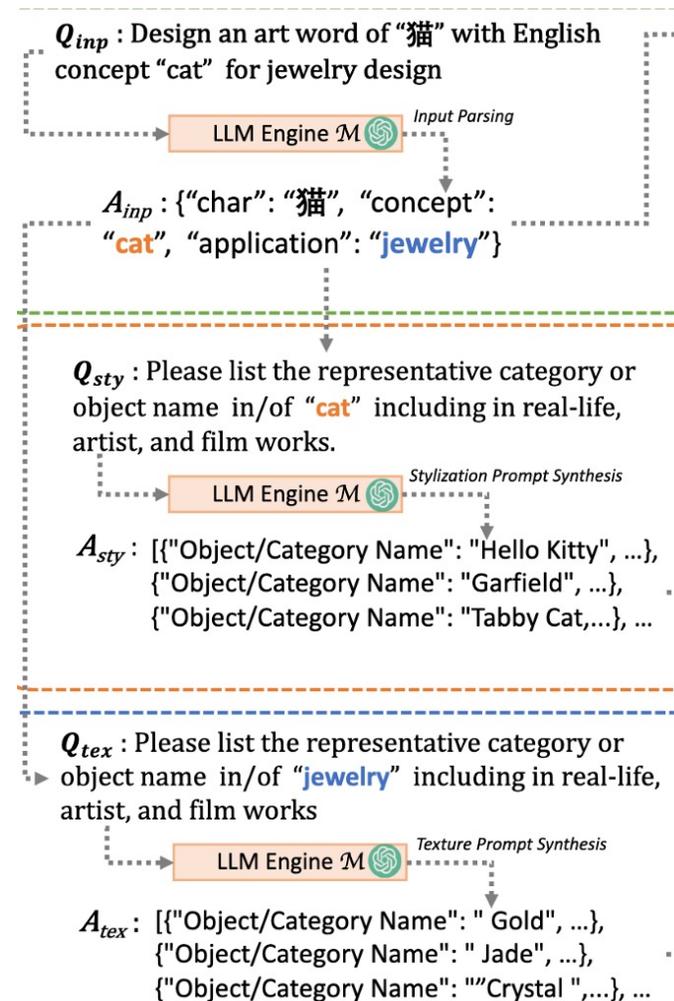




# LLM Engine

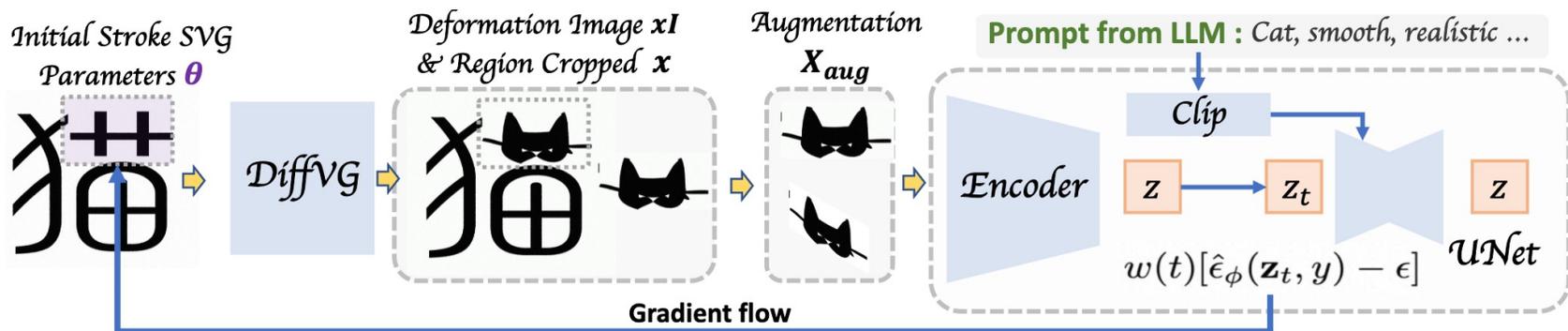
- Serves as the knowledge base and concretizes abstract notions.
- Parses freeform user input into structured prompts that instructs the three subsequent modules in generating the desired artistic fonts.

$$A_{inp} = \mathcal{M}(Q_{inp}), A_{sty} = \mathcal{M}(Q_{sty}), A_{tex} = \mathcal{M}(Q_{tex})$$



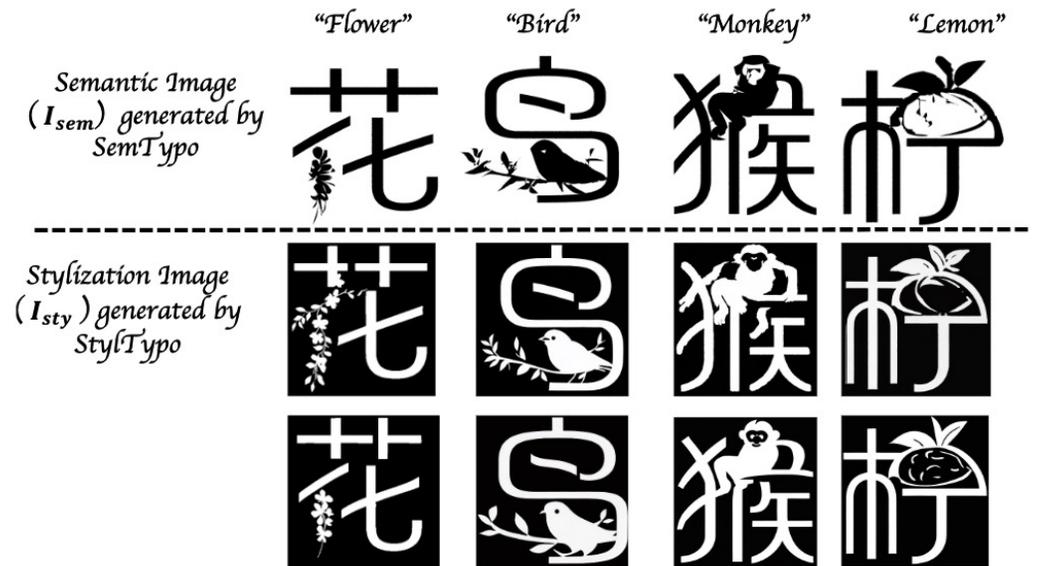
# SemTypo

- Alters typography based on the given semantic concept.
- Three stages:
  - (1) Character Extraction and Parameterization
  - (2) Transformation Region Selection
  - (3) Differentiable Rasterization



# StyTypo

- Generates smoother and more detailed images, enhancing the semantic layout.
- (1) stylized image generation: depth2image from Latent Diffusion Model
- (2) ranking and selection: ResNet trained on custom character stylization dataset to distinguish successful stylizations.



# TexTypo

- Advances the styling capacities of the StyTypo module
- Utilizes ControlNet and Scribble conditions to encourage the generation of more creatively textured fonts without compromising readability.



# Conclusion

- WordArt Designer: a user-drive artistic typography synthesis framework that addresses the inaccessibility of typography design to non-professionals.
- Innovatively uses an LLM engine to parse and translates user input into directives, guiding three subsequent modules, each accountable for different aspects of the typographic design.
- Highlights the potential of AI to augment artistic typography. Future work aims to further explore the possibilities of integrating this technology into other aspects of design, such as graphics and interactive media.